The Economic Reasons to Act on Climate Change, and to Act Immediately

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Economic development, the economics of climate change and the urgency of action: the argument

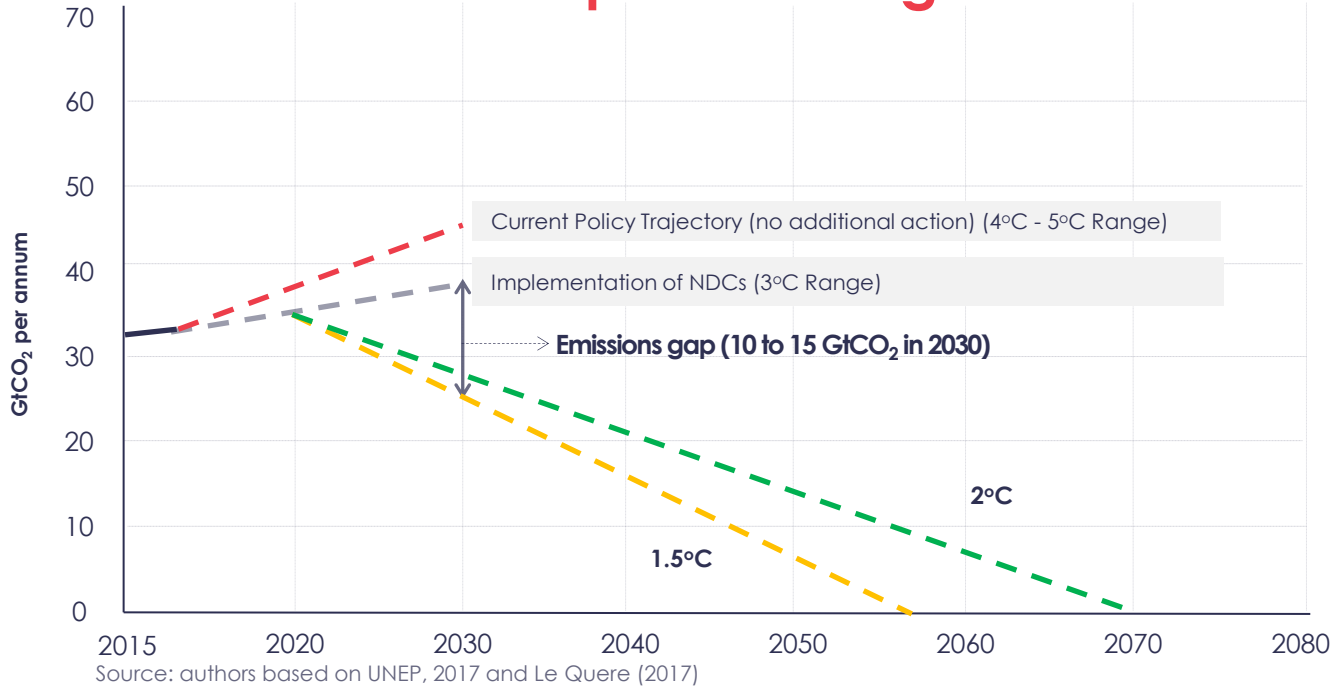
- The ***extraordinary economic advances*** since the Second World War have brought intense pressure on climate, the environment and the global commons.
- The ***science of climate change*** is clear that we must cut emissions by at least 30% in ***next two decades*** to reach the Paris targets, in other words, to avoid dangerous climate change. In that time the ***world economy will double***.
- Thus we must ***act now to change radically*** the relationship between the economic activity and damage to the environment.
- The ***economics of that change is compelling***. We can build a new form of growth and poverty reduction which is clear, sustainable, and inclusive. Including cities where we can move and breathe and ecosystems which are robust and fruitful.
- We can see what is to be done, that it can be done, and that it is very attractive. But we must build the ***political will***, and quickly, to take the strong decisions that are necessary.

- **Urgency and scale of action**
- Economic development, climate change and the SDGs
- Engagement and communication

Extraordinary improvements for human well-being in the last 70 years, but now intense pressures

- The world has seen fundamental change over the period since the Second World War:
  - ***Life expectancy*** has increased by 30 years from around 40 to around 70 years.
  - ***Population*** has roughly trebled and world income per capita has risen by a factor of around 4.
  - ***Total output*** has gone up by a factor of around 12.
- These outcomes have in large measure been fostered by the ***international economic order created after the Second World War*** and by ***progress in the countries that achieved independence*** or liberation in the following two or three decades.
- But they have put ***intense pressure on our natural capital*** (atmosphere, oceans, forests, glaciers, rivers, biodiversity…). Our global commons, the environment and our climate are under severe threat.
- ***The next two decades are decisive***; they will determine whether we suffer severe and irreversible damage to lives, livelihoods and the natural world or if we set off on a much more attractive path of sustainable and inclusive development and growth.

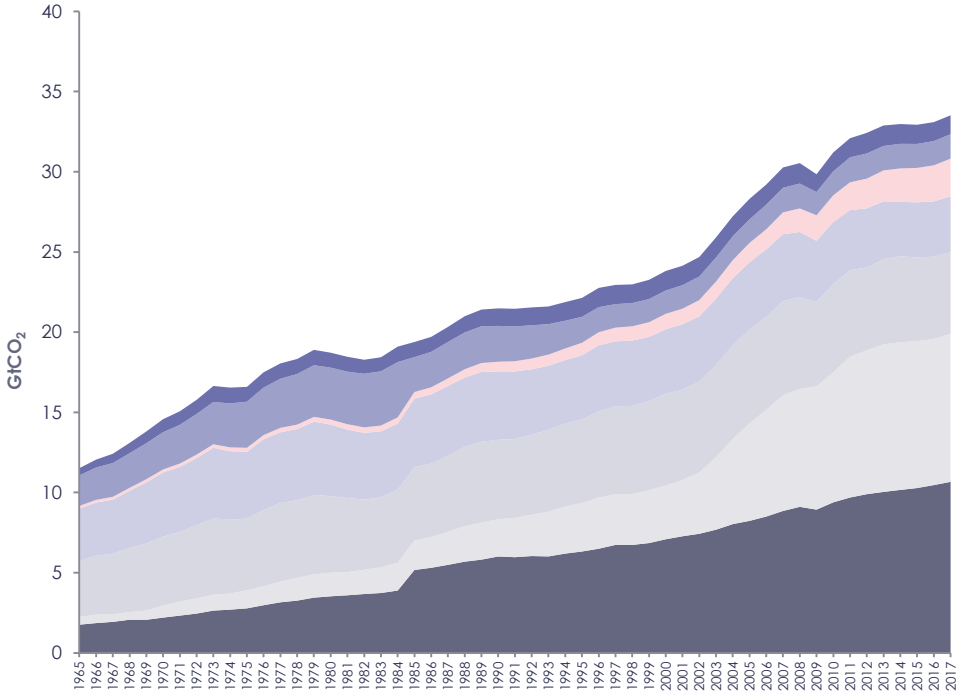
There is still a large gap between current COP21-NDCs and what is required to reach the Paris temperature targets



Source: authors based on UNEP, 2017 and Le Quere (2017)

The challenge is now to <u>accelerate action</u> to 2030 to close the gap. Requires immediate action across whole economy. Must peak emissions in next few years and go to "net zero" in next 50-60 years.

Global emissions are slowing down, but not fast enough



Source: BP Statistical Review of World Energy June 2018 (**energy sector only**)

Country	GHG emissions ($GtCO_2$) (2017)	Trend (past 5 years) ($GtCO_2$ in 2013)
Japan	1.2	(1.3)
Russia	1.5	(1.5)
India	2.3	(1.9)
EU (28)	3.5	(3.6)
USA	5	(5.3)
China	9.2	(9.2)
Rest of World	10.7	(10)
Total	33.5	(33)

Worrying increases in 2016 and 2017, EU, US falling, China plateauing.

Delay is dangerous

- The "***ratchet effect***" from flows of GHGs to concentrations (CO_2 hard to remove).
- ***Dangers of "locking in"*** long-lived high-carbon capital/infrastructure. This involves **either** commitment to high emissions **or** early scrapping of capital/infrastructure.
- ***Potentially devastating impacts*** on ecosystems, biodiversity, forests, water, air quality.
- Delay increases reliance on unproven future technologies (e.g. negative emissions) or much more ambitious action in future (politically feasible?).

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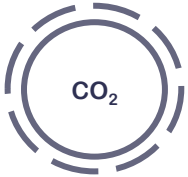
The actions of the next decades are critical in establishing low-carbon development, growth and poverty reduction

Change in the next decades

15 years	Infrastructure		2x	Investment of approximately US$ 90 trillion.
20 years	GDP		2x	Growth of approximately 3% per annum. Led by emerging and developing countries.
40 years	Urban Population		2x	Urban population will double in 40 years, Towns and cities shaped in the next 20.

At the same time
(to meet Paris targets)



~25%

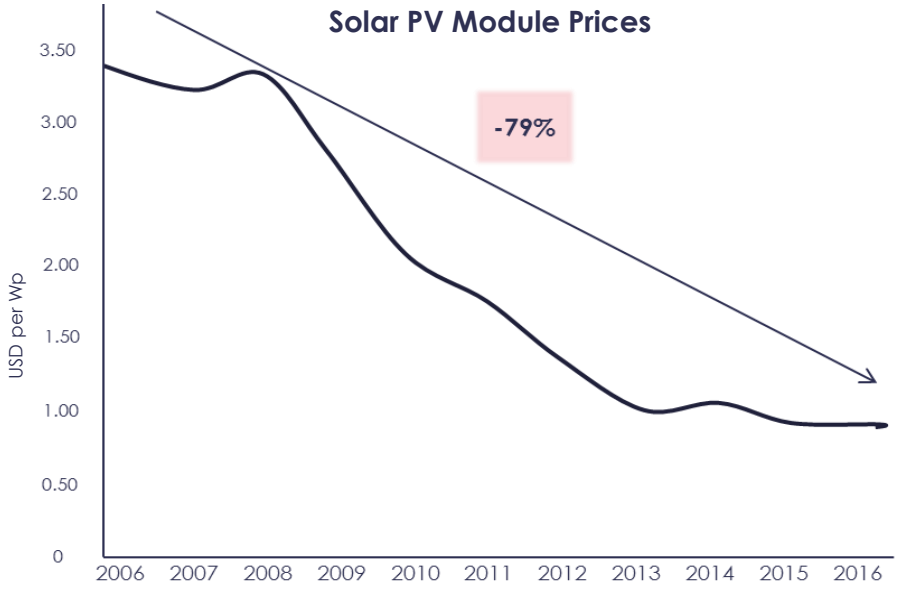
Has to decrease from ~40 to ~30 Gt CO_2 per annum.

The next decade is critical. Choices made on infrastructure and capital now will either lock us in to high emissions, or set us on a low-carbon growth path which can be sustainable and inclusive.

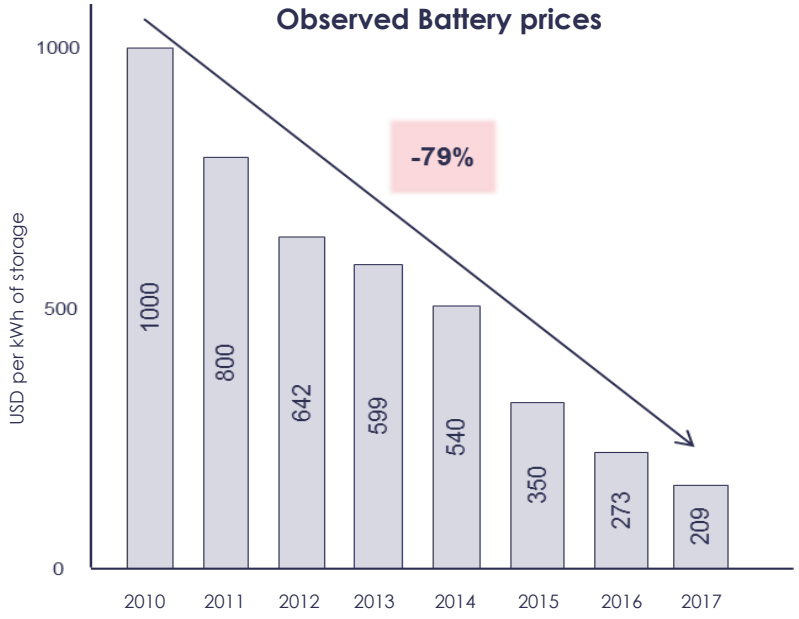
Strong investment in sustainable infrastructure will support meeting the global agenda, and accelerate growth which is sustainable and inclusive

- **Three forces** present us with a special opportunity to move beyond incremental action:
  - Historically **low interest rates and search for growth** offer the opportunity to finance the transition.
  - **Rapid technological change:** digital, materials, biotech…
  - International agreements have **provided political direction** and evidence that collaboration is possible and will continue.

The notion of "costs of action" is being transformed by rapid technological advances



Source: EIA, 2017



Source: Bloomberg New Energy Finance, 2017

Renewables with storage now competitive in power in many parts of the world. Capital costs for renewables continue to fall much faster than those for conventional technologies.

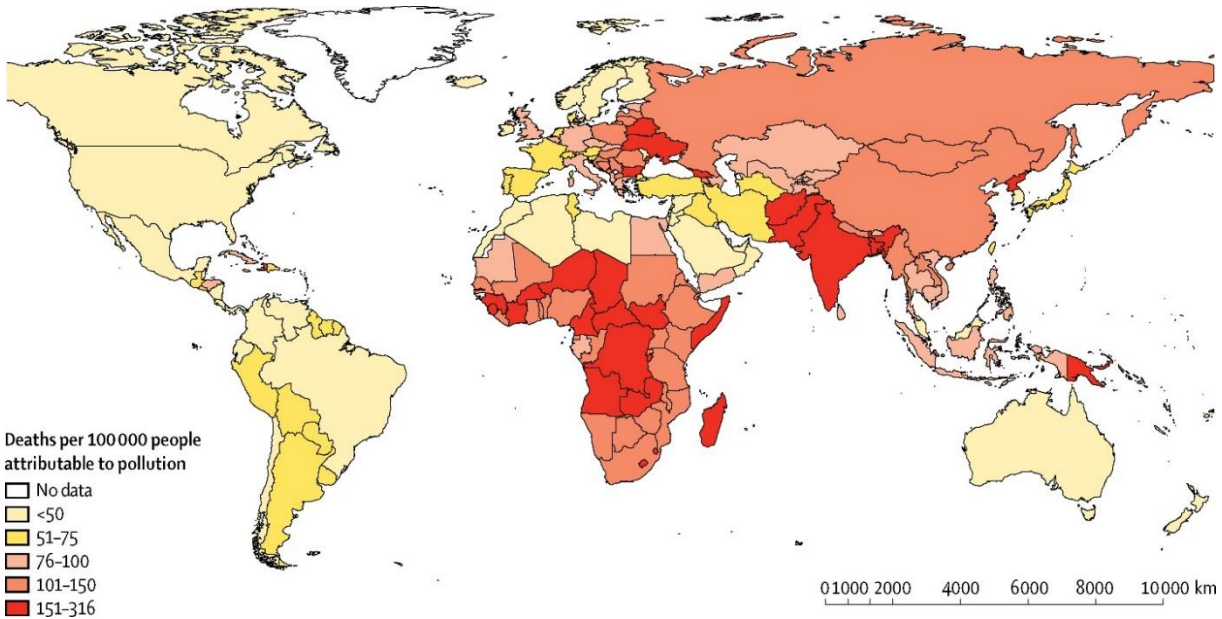
Importance of bringing down the cost of capital for clean investments

- Many ***clean***, low-carbon investments such as renewables involve ***mainly capital costs*** rather than the current or variable costs.
- ***Dirty***, fossil-fuel-based capital, is now correctly understood as increasingly ***risky***.
- Many such investments, particularly in poorer countries, face high costs of capital because ***risk is poorly managed*** and capital markets are weak.
- ***Sound and stable policies and institutions*** can radically reduce risk.
- For poorer communities, ***micro-finance*** can play strong role in decentralised and empowering action, such as small-scale solar.
- The ***multilateral development banks (MDBs)*** have a crucial role to play in: helping reduce government-induced risk; providing sharing of risk; their convening power; their instruments, such as global equity, long-term loans, and guarantees.

Air pollution is one key side-effect of GHG emissions- its costs millions of lives and more than 5% of GDP per year

- Air pollution is responsible for 6.5 million (72%) of 9 million deaths per year from all types of pollution (The Lancet, 2018).

- Pollution-related disease are highly concentrated among infants and young children, reflecting the many years of life lost with each death and case of disabling disease of a child (Ibid.).



Source: The Lancet (2018)

Growth, sustainable development, resilience and strong climate action are complementary and interwoven

- 5 - 10 years  Boost shorter-run demand and growth, sharpen supply, reduce poverty and support sustainable development through strong investment in sustainable infrastructure

>10 years  Spur innovation, creativity and growth in the medium term, unleash new waves of innovation

>20 years  Low-carbon is the only feasible longer-run growth on offer; high carbon growth self destructs

- ***Development, growth, mitigation, adaptation and resilience are intertwined*** (public transport, decentralised solar, SRI rice…
- A growth story that delivers: alternative paths of economic development; rising living standards, cities where we can move and breathe; stronger communities; ecosystems that are more productive and resilient. ***No horse-race between growth and environmental responsibility.***

The economics of climate change: towards a new sustainable and inclusive growth and poverty reduction

- The Stern Review (2006) showed that the economic costs of action on climate change are far less than the costs of inaction. The argument is now even stronger, the costs of action have decreased enormously with technical progress and the science looks ever more worrying.
- We also have the SDGs (September 2015) and the Paris agreement (December 2015).
- The economic argument has now changed as a result of all this: we can see that the transition to the low or zero carbon economy is the ***sustainable and inclusive growth story*** of the coming decades. It is very attractive dynamic story, far beyond static cost-benefit analysis.
- Not growth forever; but such growth is crucial over next few decades for SDGs and poverty reduction.
- ***If we act urgently, on scale and wisely, this growth will be sustainable and inclusive. We can deliver on the SDGs, meet the Paris agreement and overcome poverty***.

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Climate change differs from problems of the past and creates four major difficulties for public understanding and collective action

Immense scale of impacts	Large risk/uncertainty	Long lags in consequences	'Publicness' of the causes and effects
• Water inundation (sea level rise); • Desertification. • More frequent and intense extreme weather events .(hurricanes, floods, heatwaves). • Mass migration and conflict.	• 3°C not seen for around 3 million years. • 4 or 5°C not seen for tens of millions of years. • Climate history tells us that major transformations are likely: where and how we can live.	• Accumulation of emissions to GHG concentrations and effects on climate take time to appear; • Gradual changes until tipping points reached (large-scale forest die-back, ocean currents shut down, melting permafrost…).	• It is the sum of all emissions that matter, some are more responsible and some less. • They all contribute irrespective of when or where they occur.
Redefines where people can live.	**Difficult to predict when and where impacts will occur.**	**Tipping points are potentially irreversible.**	**"greatest market failure the world has ever seen" (Stern Review, 2006).**

Communication is essential, academics must engage with and foster public discussion much more clearly and intensively

- Academics have an obligation to share ideas much more broadly and engage with society as a whole.
- Have to convey fundamental ideas in simple language that reaches out to people's lives and experiences.
- Many examples from which we can learn, including, for example, academics (John Maynard Keynes and Stephen Hawking) and world leaders (Mahatma Gandhi, Nelson Mandela and Pope Francis).

"If we destroy creation, creation will destroy us."
Pope Francis, May 2014

Acting across society to mobilise for change (1)

- Optimism about what **we can do**; concern about what **we will do**. Must change political understanding and willingness to act on basis of sound research and argument. How to create the political will, public involvement and investor action necessary for urgent action on scale?
- Set out necessary **targets** on scale and urgency and be active in key political arenas, particularly for key **countries and sectors**.
- Deepen **analysis**, crystallise arguments around **opportunity and growth**, identify key areas and points of **action**, **engage** in public discussion, **communicate** clearly and strongly.
- **Central role of development banks** in scaling up via policies, platforms and risk management. System needs expansion and reform.

Acting across society to mobilise for change (2)

- Invest in a **"just transition"** as activities move towards low-carbon.
- Recognise great potential of **financial sector**: engage **investors**; Task Force on Climate-Related Financial Disclosure.
- Influence of potential **employees** and **customers**.
- Crucial role of **NGOs**, **schools and universities**.
- **Moral leadership of fundamental importance**.